

EFFECT OF GENDER AND RESIDENCE ON MATHEMATICAL ABILITIES OF POST GRADUATE MATHEMATICS STUDENTS

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Abstract

In this paper, we have studied gender and residence differences in mathematical abilities of post graduate mathematics students in Swami Ramanand Teerth Marathwada University, Nanded, India. We have also studied such differences in admission to post graduation course of Mathematics. Data of this experiment is collected by Mathematical ability test. Four hundred students were participated in this study. Results obtained by statistical tool chi square test, P value < 0.05 are considered statistically significant.

Keywords: Gender, Residence, differences, Mathematical abilities, Post Graduate student.

Introduction

Many authors have investigated the effect of gender and residence on students academic achievement and abilities in various subjects of different age group. In this paper we have studied the gender and residence differences in mathematical abilities of M.Sc. mathematics students in campus and affiliated colleges of S. R. T. M. University, Nanded.

Objective of Study

1. To study gender differences in mathematical ability test of post graduate mathematics students.
2. To study residence differences in mathematical ability test of post graduate mathematics students.
3. To know whether gender and residence impact is possible on mean test score in mathematical ability test of post graduate mathematics students.

Research Methodology

Methods of Data Collection:

Primary Data collection was done through the questionnaire method from the respondents. The questionnaire was given to the students and they were asked to fill them up. In this test we select 20% easy level questions, 60% moderate level questions and 20% hard level questions in degree and post graduate level syllabus of mathematics. Necessary help was rendered whenever they found it difficult to answer. Sample size of this study is 400 students. All students are studying in the campus as well as affiliated colleges in Swami Ramanand Teerth Marathwada University, Nanded, India.

Data Analysis & Interpretation:

Researcher collected primary data through structured questionnaire. The data was then entered manually in IBM SPSS (Statistical Package for Social Science) Version 22 and then rechecked for any missing values, duplications or errors followed by further processing and testing of hypothesis by applying appropriate statistical tests.

Demographic Analysis:

This of the analysis contains general information about the students and helps to understand the demographics of the students who took the survey. The questions aim to find out students Gender and Residence who admitted in post-graduation course in mathematics.

Table No. 1: Demographic analysis

Sr. No	Factor	Option	No. of Students	Percentage
1	Gender	Male	136	34.00
		Female	264	66.00
		Rural	292	73.00

2	Residence	Urban	108	27.00
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1. If we observe above table, we can see that the trend of admission to post-graduation in Mathematics is more of girls than boys. From total admission 66% of the girls have taken this course. Although good, but there is a special reason behind this. In backward areas like Marathwada, education to boys is still given importance and more amount is spent on their education. In these areas boys are encouraged by their families for education, therefore more and more boys get admission in medical, engineering and professional courses after 12th standard. Even today, parents in this region are not ready to send girls for education in metro cities, so most of the girls enroll in a basic science course like B.Sc. in the college of their village or town after 12th standard. Therefore, after graduation most of the girls come to post-graduation.
2. Similarly, if we study the student residential background, we will see that students in rural areas are more inclined to take this course than students in urban areas. 73% of the students are admitted from rural areas. One of the reasons for this is that most of the students living in urban areas have a good financial situation so that they can get a good college education and get expensive tuitions. Therefore, these students easily pass the qualifying entrance examination of medical, engineering courses and get admission in that course. On the other hand, due to poor financial condition of rural students, they cannot afford expensive tuitions. They cannot come to the city to pursue their education. So, most of the rural students enroll in a basic science course like B.Sc. in the college of their town after 12th standard. After B.Sc. they prefer to take admission to post graduation.

Results

In this section we have obtained whether gender and residence factor are significant or not in admission for post-graduation in mathematics and scoring in mathematical abilities. Results are obtained by using chi-square test.

Table 1: Comparison of residence (native place area) between gender (N=400)

Residence (Native Place Area)	Gender		Chi square	P value
	Male (N=136)	Female (N=264)		
Rural	119 (87.5%)	173 (65.53%)	21.981	0.001
Urban	17 (12.5%)	91 (34.47%)		

There is statistically significant difference in Gender between residences (native place area) with P value 0.001.

Table 2: Descriptive analysis of test score in study population (N=400)

Parameter	Mean ± SD	Median	Minimum	Maximum	95% C.I.	
					Lower	Upper
Test Score	35.2 ± 10.63	36.0	14.0	50.0	34.2	36.3

The mean Test Score was 35.2 ± 10.63 in the study population, minimum score was 14 and maximum was 50 in the study population (95% CI 34.2 to 36.3). (Table 2)

Table 3: Comparison of mean of test score between gender (N=400)

Parameter	Gender (Mean± SD)		P value
	Male (N=136)	Female (N=264)	
Test Score	35.34 ± 11.68	35.13 ± 10.07	0.852

There was no statistically significant difference in Mean Test Score between Gender with P value 0.852. (Table 3)

Table 4: Comparison of mean of test score between residence (native place area) (N=400)

Parameter	Residence (Native place area) (Mean± SD)		P value
	Rural (N=292)	Urban (N=108)	
Test Score	34.56 ± 10.86	36.93 ± 9.84	0.048

There was statistically significant difference in Mean Test Score between Residence (Native place area) with P value 0.048. (Table 4)

Table 5: Descriptive analysis of test score in the study population (N=400)

Mathematical Ability (Test Score)	Frequency	Percentages
Fail (<20)	57	14.25%
Pass (20-30)	81	20.25%
Grade A (30-36)	66	16.50%
Grade A+ (>36)	196	49.00%

Among the study population, 57(14.25%) participants were fail, 81(20.25%) participants were pass, 66(16.50%) participants were get Grade A, and 196(49%) participants were get Grade A+ in the test.(Table 5)

Table 6: Comparison of mathematical ability (test score) between gender (N=400)

Mathematical Ability (Test Score)	Gender		Chi square	P value
	Male (N=136)	Female (N=264)		
Fail	27 (19.85%)	30 (11.36%)	9.461	0.024
Pass	22 (16.18%)	59 (22.35%)		
Grade A	16 (11.76%)	50 (18.94%)		
Grade A+	71 (52.21%)	125 (47.35%)		

There was statistically significant difference in Gender between Mathematical Ability Test Score with P value 0.024. (Table 6)

Table 7: Comparison of mathematical ability (test score) between residence (native place area) (N=400)

Mathematical Ability (Test Score)	Residence (Native Place Area)		Chi square	P value
	Rural (N=292)	Urban (N=108)		
Fail	48 (16.44%)	9 (8.33%)	5.546	0.136
Pass	61 (20.89%)	20 (18.52%)		
Grade A	48 (16.44%)	18 (16.67%)		
Grade A+	135 (46.23%)	61 (56.48%)		

There was no statistically significant difference in Residence (Native Place Area) between mathematical ability test score with P value 0.136. (Table 7)

Conclusion

In this paper, we have studied that there is statistically significant difference between gender and residence in admission process. we have also studied that there is no statistically significant difference in mean test score in mathematical ability test between gender but statistically significant difference in mean test score in mathematical ability test between residence. There is no statistically significant difference in test score like grade in mathematical abilities between residence but statistically significant difference in test score in mathematical abilities between gender.

References:

1. Benbow, C. P., & Stanley, J. C. (1980). Sex differences in mathematical ability: Fact or artifact *Science*, 210(4475), 1262-1264.
2. Eccles, J. S., & Jacobs, J. E. (1986). Social forces shape math attitudes and performance. *Signs, Journal of women in culture and society*, 11(2), 367-380.
3. Forgasz, H. and Leder G. (1996), Mathematics classrooms, gender and affect, *Mathematics Education Research Journal*, 8 (1): 153-173.
4. Ajai, J.T. &Imoko, I.I. (2015). Gender differences in mathematics achievement and retention scores: A case of problem-based learning method. *International Journal of Research in Education and Science (IJRES)*, 1(1), 45-50.
5. Abiam, P.O. &Odok, J. K. (2006). Factors in students achievement in different branches of secondary school mathematics. *Journal of Education and Technology*, 1(1), 161-168.
6. Susana Rodriguez, BibianaRegueiro (2020). Gender Differences in Mathematics Motivation: Differential Effects on Performance in Primary Education. *Frontiers in Psychology*, Volume 10, Article 3050, 1-8.